National Aeronautics and
Space Administration

Goddard Space Flight Center
Greenbelt, Maryland 20771

Laboratory Chief's Summary

Dear Reader:

Welcome to the Laboratory for Atmospheres' annual report for 2002. I thank you for your interest. We publish this report each year to describe the Laboratory and its work and to summarize our accomplishments.

We intend this document to address a broad audience. Our readers include managers and colleagues within NASA, scientists outside the agency, graduate students in the atmospheric sciences, and members of the general public. Inside, you'll find descriptions of our work scope, our people and facilities, our place in NASA's mission, and our accomplishments for 2002.

The Laboratory's more than 400 scientists, technologists, and administrative personnel are part of the Earth Sciences Directorate of NASA's Goddard Space Flight Center. Together, we pursue our mission of advancing the knowledge and understanding of the atmospheres of the Earth and other planets. In doing so, we contribute directly to two of NASA's primary Enterprises, Earth Science and Space Science.

We accomplished much in 2002. Laboratory scientists hosted 55 seminars given by outside scientists, 42 seminars were given by Laboratory scientists at Goddard, and more than 61 seminars were presented by our scientists at outside institutions. We participated in 101 workshops, 32 science team meetings, 10 science policy meetings, 12 conferences, published 200 refereed papers, hosted 176 short-term visiting scientists, and took part in an array of educational activities.

The Laboratory continued its active role in developing and calibrating new and improved instruments for spaceflight and field campaigns. In Section 4, we highlight SOLSE/LORE (Shuttle Ozone Limb Sounding Experiment/Limb Ozone Retrieval Experiment) and CPL (Cloud Physics Lidar) instruments.

The Laboratory had an exciting year participating in international field campaigns and in making major advances in scientific discovery and development of data sets. Laboratory scientists organized and played lead roles in CRYSTAL-FACE, IHOP, SOLVE II, and CONTOUR. In Section 5, we presented scientific highlights which include, among others:

- Observing System Simulation Experiments showing that assimilation of space-based lidar wind profiles can lead to very substantial improvement in the accuracy of weather forecasts.

- Development of a new near real-time 3-hourly global rainfall data set based on TRMM rainfall algorithms, and demonstration that TRMM rainfall data can be used to improve El Niño prediction.

- Numerical experiments with the Goddard Cumulus Ensemble model to provide better understanding of convection and circulation characteristics in diverse climatic regimes such as the Amazon, the central U.S., Western Pacific and the South China Sea.

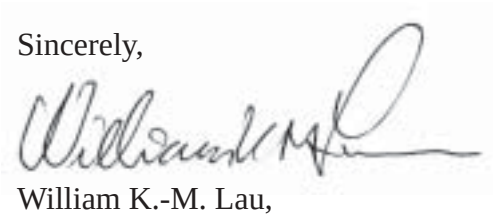
- Publication of an authoritative review in Nature providing a satellite view of natural and anthropogenic aerosols in the climate systems based on data from MODIS, TOMS and other space-based and ground-based remote sensing platforms.

- Observational evidence from SOLVE II of ozone loss in the polar stratosphere due to catalytic chorine and bromine reactions by polar stratospheric clouds during the winter of 2002–2003.

The year 2002 was also a time to bid farewell to valuable members of the Laboratory, Art Aikin, Andrea Ledvina, C-H Sui, and Cindy Lewis.

I am pleased to greet new civil servants in the Laboratory, Mian Chin, Belay Demoz, Alexander Marshak, Steve Platnick, and Judd Welton.

Sincerely,



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